

**U.S. FISH AND WILDLIFE SERVICE
SPECIES ASSESSMENT AND LISTING PRIORITY ASSIGNMENT FORM**

SCIENTIFIC NAME: *Dendroica angelae*

COMMON NAME: elfin woods warbler

LEAD REGION: 4

INFORMATION CURRENT AS OF: November 2, 2005

STATUS/ACTION:

☐ Species assessment- determined species did not meet the definition of endangered or threatened under the Act and, therefore, was not elevated to Candidate status

☐ New candidate

☒ Continuing candidate

☐ Non-petitioned

☒ Petitioned - Date petition received: May 11, 2004

☐ 90-day positive - FR date: ☐

☐ 12-month warranted but precluded - FR date: ☐

☐ Did the petition request a reclassification of a listed species?

FOR PETITIONED CANDIDATE SPECIES:

a. Is listing warranted (if yes, see summary of threats below)? yes

b. To date, has publication of a proposal to list been precluded by other higher priority listing actions? yes

c. If the answer to a. and b. is "yes", provide an explanation of why the action is precluded. We find that the immediate issuance of a proposed rule and timely promulgation of a final rule for this species has been, for the preceding 12 months, and continues to be, precluded by higher priority listing actions (including candidate species with lower LPNs). During the past 12 months, almost our entire national listing budget has been consumed by work on various listing actions to comply with court orders and court-approved settlement agreements, meeting statutory deadlines for petition findings or listing determinations, emergency listing evaluations and determinations, and essential litigation-related, administrative, and program management tasks. We will continue to monitor the status of this species as new information becomes available. This review will determine if a change in status is warranted, including the need to make prompt use of emergency listing procedures. For information on listing actions taken over the past 12 months, see the discussion of "Progress on Revising the Lists," in the current CNOR which can be viewed on our Internet website (<http://endangered.fws.gov/>).

☐ Listing priority change

Former LP: ☐

New LP: ____

Date when the species first became a Candidate (as currently defined): October 25, 1999

____ Candidate removal: Former LP: ____

____ A – Taxon is more abundant or widespread than previously believed or not subject to the degree of threats sufficient to warrant issuance of a proposed listing or continuance of candidate status.

____ U – Taxon not subject to the degree of threats sufficient to warrant issuance of a proposed listing or continuance of candidate status due, in part or totally, to conservation efforts that remove or reduce the threats to the species.

____ F – Range is no longer a U.S. territory.

____ I – Insufficient information exists on biological vulnerability and threats to support listing.

____ M – Taxon mistakenly included in past notice of review.

____ N – Taxon does not meet the Act's definition of "species."

____ X – Taxon believed to be extinct.

ANIMAL/PLANT GROUP AND FAMILY: Bird - Emberizidae

HISTORICAL STATES/TERRITORIES/COUNTRIES OF OCCURRENCE: Puerto Rico

CURRENT STATES/TERRITORIES/COUNTRIES OF OCCURRENCE: Puerto Rico

LAND OWNERSHIP: The Puerto Rico Department of Natural and Environmental Resources manage the Maricao Commonwealth Forest. The U.S. Forest Service manages the Caribbean National Forest. Adjacent areas that may contain habitat suitable to *Dendroica angelae* are in private ownership.

LEAD REGION CONTACT: Richard Gooch, 404/679-7124

LEAD FIELD OFFICE CONTACT: Dr. Jorge E. Saliva, Caribbean Field Office, 787/851-7297

BIOLOGICAL INFORMATION:

Species Description

Dendroica angelae (the elfin woods warbler) is about 12.5 centimeters (4.9 inches) in length, and entirely black and white. The thin, white eyebrow stripe, white patches on ear-covers and neck, incomplete eye ring, and black crown distinguish it. The immature bird is similar to the adult, but black is replaced by grayish-green on the back, and yellowish-green on the head and underparts.

Taxonomy

Dendroica angelae was discovered in 1971 from the elfin or dwarf forest type of the Caribbean National Forest in the Luquillo Mountains. It was described by Kepler and Parkes (1972), and

was initially thought to occur only in the Luquillo Mountains. It was later observed in the Sierra de Cayey and the Cordillera Central. In the Cordillera Central, it was reported from the Maricao and Toro Negro Commonwealth Forests.

Habitat/Life History

Dendroica angelae was at first thought to occur only in the high elevation dwarf or elfin forests (640 to 1,030 meters (2,099 to 3,378 feet)), but it has since been found at lower elevation Tabonuco and Palo Colorado forest types (370 to 600 meters or 1,213 to 1,968 feet). Little information is available concerning the species' presence in the Toro Negro Forest and the Sierra de Cayey. Arroyo-Vázquez (1991) did not find the species in the Toro Negro Forest in surveys conducted following Hurricane Hugo in 1989. *Dendroica angelae* has been more extensively studied in the Maricao Commonwealth Forest and the Caribbean National Forest.

The Maricao Commonwealth Forest, managed by the Puerto Rico Department of Natural and Environmental Resources (PRDNER), is located in western Puerto Rico in the Cordillera Central. It is approximately 4,150 hectares (10,250 acres) in size and is divided into two segments. The forest overlies serpentine derived soils, low in water holding capacity, and low in fertility, resulting in more xeric vegetation than might be expected given the amount of rainfall (2,550 cm (994 inches) annually). Vegetation types have been identified as dry slope forest, slope forest, mixed hardwood, exposed ridge woodland (dwarf forest) and *Podocarpus* mixed woodland (Department of Natural Resources 1976).

The Caribbean National Forest, managed by the U.S. Forest Service, is located in the Luquillo Mountains in eastern Puerto Rico. It is approximately 11,300 hectares (27,911 acres) in size, with elevations ranging from 100 to 1,075 meters (328 to 3,526 feet). Forest types have been described as tabonuco, colorado, palm, and dwarf or elfin forest. The elfin forest is characterized by high rainfall, high humidity, low insolation, low temperatures, and constant winds. Found on the summits of the mountains, it is composed of dense stands of short, small diameter, twisted trees and shrubs. The plants and forest floor are covered with mosses and epiphytes. Plant species richness is low compared to other forest types in the Luquillo Mountains (Brown *et al.* 1983).

Dendroica angelae builds a compact cup nest, usually close to the trunk and well hidden among the epiphytes of a small tree. The breeding season extends from March to June (Raffaele 1998). The species forages in the middle part of trees, gleaning insects from leaves in the outer portion of the tree crown (Cruz and Delannoy 1984).

Historical Range/Distribution

Luquillo Mountains in the Caribbean National Forest (Luquillo) and the Maricao Commonwealth Forest (Maricao), Puerto Rico.

Current Range/Distribution

Elfin woods warbler (*Dendroica angelae*) Candidate Form

Cruz and Delannoy (1984) stated that the present distribution of *Dendroica angelae* is probably related to the habitat destruction that has occurred in the past. In the Luquillo Mountains, *Dendroica angelae* is rare in the areas of El Yunque and Mt. Britton, and more common along the Trade Winds Trail to El Toro, and in the upper part of the Icacos Valley. Intermediate numbers are found along the Caimitillo Trail and along the road to El Yunque. Even where it is more abundant, the species is among the most uncommonly encountered species in the elfin woods (Waide 1995). In the Maricao Forest, *Dendroica angelae* is known from elevations ranging from 650 to 900 meters (2,132 to 2,952 feet). In this area, the species is found in a variety of habitats, including those that have been altered by humans. Population densities of the species varied, with the highest densities being recorded from Los Viveros (20.9/25 ha (51.6/61.7 acres)) and significant lower densities from Rosario Alto (3.0/25 hectares (7.4/61.7 acres)) and Campamento Santana (1.2/25 hectares (2.9/61.7 acres)). The Los Viveros area is a *Podocarpus*-mixed hardwood forest with a continuous canopy at 15 to 20 meters (49.2 to 65.6 feet). The latter two areas are a mixture of plantation (*Eucalyptus robusta* and *Calophyllum calaba*, and dwarf or elfin forest on the ridges (Cruz and Delannoy 1984). Arroyo-Vázquez (1991) found similar densities in surveys conducted in 1989 and 1990. The results of this study suggest that the species migrates vertically in elevation, moving towards the north facing valleys during the months of heaviest rainfall. During a study of the movements and habitat characteristics of *Dendroica angelae* in the Maricao Forest in 2004-2005, Delannoy observed that the range of this species extended outside the Maricao Forest boundaries and into private lands adjacent to the Forest that contained a mixture of mature native trees and shade coffee plantations (Delannoy, personal communication).

Population Estimates/Status

The latest population estimate of *Dendroica angelae* was reported by Waide (1995) in 1995; when he estimated 138 pairs in the Luquillo Mountains, using an estimate of the area of elfin woodland (329 hectares) and the measured maximum density of *Dendroica angelae* in the Maricao Forest (20.9 individuals/hectare). Current numbers at the Maricao Forest are not known; however, through a grant agreement with the Service in 2004-2005, the Center for Development and Research of the University of Puerto Rico, Mayagüez Campus, is conducting studies of habitat characterization and ecology of *Dendroica angelae* in Maricao that would provide information on the status of the species in the Maricao Forest.

THREATS:

- A. The present or threatened destruction, modification, or curtailment of its habitat or range. Cruz and Delannoy (1984) stated that *Dendroica angelae* was probably more widely distributed in the past, but that it had become restricted in distribution as a result of the destruction and modification of its habitat for a variety of purposes. Today, it has been documented from only four locations, two of which have little information available. Post-Hurricane Hugo studies in Toro Negro did not reveal the presence of this species. A large portion of dwarf or elfin forest in both the Maricao Commonwealth Forest and the Caribbean National Forest has been destroyed for the construction of telecommunication

towers. Although expansion of these facilities is not known at this time, any future expansion of these facilities would result in the elimination of additional habitat. Areas adjacent to the forests, previously planted in shade coffee, are now being converted to sun coffee. The elimination of this over story results in the reduction of available wildlife habitat, and since the elfin woods warbler may migrate vertically, utilizing at times lower elevation areas where sun coffee plantations are found, it is essential to conserve these habitats.

Waide (1995) suggested that areas of high pedestrian use have fewer birds. Therefore, the expansion of trail or road systems in either forest, or the increased use of those presently existing, may pose a threat to the species. Timber management is not conducted in the elfin or dwarf forest, but the species also occurs at lower elevations, for example, in the Colorado forest in the Luquillo Mountains. Timber management may reduce over story tree species diversity and canopy cover, characteristics that are positively associated with the density of the species (Cruz and Delannoy 1984, Waide 1995).

- B. Overutilization for commercial, recreational, scientific, or educational purposes. These factors have not been documented as threats to *Dendroica angelae*.
- C. Disease or predation. The presence of recreational and communication facilities in the Caribbean National Forest has led to a proliferation of feral animals, such as cats (*Felis catus*) and dogs (*Canis familiaris*). These and other introduced species, such as rats (*Rattus rattus*), are potential nest predators of *Dendroica angelae*, because they prey upon eggs, young, and/or adults of other bird species. Arroyo-Vázquez (1991) and Waide (1995) suggest that native species such as the pearly-eyed thrasher (*Margarops fuscatus*) and the sharp-shinned hawk (*Accipiter striatus*) may prey on the species. Although there are no records of predation by arboreal reptiles on eggs, juveniles, or adult *Dendroica angelae*, the Puerto Rican boa (*Epicrates inornatus*) and the green anole (*Anolis cuvieri*), which are found within the same habitat and are known to prey on other birds and their nests, may prey upon nests of *Dendroica angelae*.
- D. The inadequacy of existing regulatory mechanisms. Although the Commonwealth of Puerto Rico has regulations that protect threatened and endangered species, *Dendroica angelae* is not currently on the Commonwealth list. Federal listing would provide protection under the Endangered Species Act, and, in accordance with the existing cooperative agreement under section 6, it would ensure the warbler's addition to the Commonwealth list. No management plan is currently available for the Maricao Commonwealth Forest. Despite its protection as a public forest, development projects continue to be proposed (e.g. construction of roads, recreational facilities, parking lots, telecomm towers, guest houses/hotels, etc). Commonwealth regulatory mechanisms can be modified or amended to allow construction in public ("protected") forests, if deemed in the best interest of the public. An adjacent municipality initiated the construction of a

road through the forest and destroyed a large tract of forested vegetation in 2001, although the action was stopped.

- E. Other natural or manmade factors affecting its continued existence. Arroyo-Vázquez (1991) suggested that *Dendroica angelae* had a specific nesting requirement, aerial leaf litter, and that the species may be affected by the lack of availability of optimal nest sites. Catastrophic events such as hurricanes may affect the abundance and distribution of the *Dendroica angelae*. Following Hurricane Hugo in 1989, Arroyo-Vázquez (1991) did not find any individuals in the Toro Negro Commonwealth Forest or in Luquillo. Waide (1995) stated that the abundance of *Dendroica angelae* in the lower elevation forests of the Icacos Valley may be a temporary response to disturbance, given the severe damage incurred by the dwarf forest during Hugo. Human-induced and natural forest fires commonly occur at the Maricao Forest, particularly during the dry season; and although reported fires have mostly occurred on the timber plantations of the lower slopes, if not contained these fires may directly or indirectly impact the population of *Dendroica angelae*.

CONSERVATION MEASURES PLANNED OR IMPLEMENTED:

Scientists from the University of Puerto Rico, Mayagüez Campus, and the U.S. Forest Service have conducted studies on the breeding biology, foraging behavior, abundance and distribution of *Dendroica angelae* at various forests (unpublished data).

SUMMARY OF THREATS (including reasons for addition or removal from candidacy, if appropriate):

Habitat destruction from expansion of public facilities within the forests, potential construction of additional telecommunication towers and their maintenance, disruption of breeding activities from pedestrians and high human use areas, switching from shade to sun coffee plantations, timber management practices, potential predators, and catastrophic natural events such as hurricanes and forest fires, threaten populations of *Dendroica angelae*. These threats are not imminent, because most of the known range of this species is found within the Maricao Commonwealth Forest and the Caribbean National Forest that afford some level of protection; however, they provide sufficient information on biological vulnerability to maintain *Dendroica angelae* as a candidate species, albeit issuance of a proposed rule on this species is precluded by higher-priority listing actions.

For species that are being removed from candidate status:

___ Is the removal based in whole or in part on one or more individual conservation efforts that you determined met the standards in the Policy for Evaluation of Conservation Efforts When Making Listing Decisions (PECE)?

RECOMMENDED CONSERVATION MEASURES

LISTING PRIORITY

THREAT			
Magnitude	Immediacy	Taxonomy	Priority
High	Imminent	Monotypic genus	1
		Species	2
		Subspecies/population	3
	Non-imminent	Monotypic genus	4
		Species	5*
		Subspecies/population	6
Moderate to Low	Imminent	Monotypic genus	7
		Species	8
		Subspecies/population	9
	Non-imminent	Monotypic genus	10
		Species	11
		Subspecies/population	12

Magnitude:

The distribution of *Dendroica angelae* is limited to two populations on opposite ends of Puerto Rico. Ongoing surveys and censuses for this species in other high elevation forests along the central mountain chain (Commonwealth Forests of Toro Negro, Guilarte, Bosque del Pueblo, and Carite) have failed to detect this species. Recreational activities within areas where *Dendroica angelae* occurs, and management actions such as timber production or construction of facilities, may affect a significant proportion of the species, and catastrophic natural events may affect one or both known populations.

Imminence:

The immediacy of threat to *Dendroica angelae* is non-imminent because, although enforcement of regulations may not be adequate at times, most of the known range of this species is within forests administered and managed by the Puerto Rico Department of Natural and Environmental Resources or the U.S. Forest Service. Management plans for National and Commonwealth forests include the protection and conservation of species classified under Puerto Rico Department of Natural and Environmental Resources regulations as critical, threatened, or endangered. Actions that may impact such species are generally scrutinized, and measures to minimize or avoid impacts to these species are recommended and implemented, if deemed appropriate. The Service works closely with the Puerto Rico Department of Natural and Environmental Resources or the U.S. Forest Service in the evaluation of activities that may have an effect on candidate and listed species within the Maricao Forest and Luquillo Mountains. There are no known actions or projects planned within these forests that would destroy habitat for, or affect populations of, *Dendroica angelae*.

Yes Have you promptly reviewed all of the information received regarding the species for the purpose of determining whether emergency listing is needed?

Is Emergency Listing warranted? No. At the time of this review, there was no indication that threats to *Dendroica angelae* have increased, or that population numbers have been reduced from previous numbers.

DESCRIPTION OF MONITORING:

The Service has funded an additional study to investigate the status and nesting habitat requirements of *Dendroica angelae* at the Maricao Commonwealth Forest, in cooperation with the University of Puerto Rico, Mayagüez Campus that started in the fall of 2004.

COORDINATION WITH STATES:

The Puerto Rico Department of Natural and Environmental Resources manage the Maricao Commonwealth Forest and sporadically provide assistance and information on recent sightings and trail access. Additionally, the Service works closely with the Puerto Rico Department of Natural and Environmental Resources in the coordination of research on *Dendroica angelae* at the Maricao Forest funded by the Service.

Indicate which State(s) did not provide any information or comments: N/A

LITERATURE CITED

- Arroyo-Vázquez, B. 1991. Comparative study of foraging behavior and habitat selection of resident wood warblers (*Dendroica*) in southwestern Puerto Rico. M.S. thesis, University of Arkansas. 83 pp.
- Brown, S., A. E. Lugo, S. Silander, and L. Liegel. 1983. Research history and opportunities in the Luquillo Experimental Forest. U.S.D.A. Forest Service, General Technical Report SO-44. 128 pp.
- Cruz, A. and C. A. Delannoy. 1984. Ecology of the elfin woods warbler (*Dendroica angelae*). I. Distribution, habitat usage, and population densities. Carib. J. Sci. 20: 89-96.
- Department of Natural Resources. 1976. The Master Plan for the Commonwealth Forests of Puerto Rico. San Juan, Puerto Rico. 259 pp.
- Kepler, C. B. and K. C. Parkes. 1972. A new species of warbler (Parulidae) from Puerto Rico. Auk 89: 1-18.
- Raffaele, H., J. Wiley, O. Garrido, A. Keith, and J. Raffaele. 1998. A guide to the birds of the West Indies. Princeton University Press. Princeton, N.J. 511 pp.

Waide, R. 1995. Status and conservation of the Elfin Woods Warbler (Dendroica angelae) in the Luquillo Experimental Forest. Final Report submitted to the U.S. Fish and Wildlife Service. 25 pp.

APPROVAL/CONCURRENCE: Lead Regions must obtain written concurrence from all other Regions within the range of the species before recommending changes, including elevations or removals from candidate status and listing priority changes; the Regional Director must approve all such recommendations. The Director must concur on all resubmitted 12-month petition findings, additions or removal of species from candidate status, and listing priority changes.

Approve: /s/ Jeffrey M. Fleming 11/16/2005
Acting Regional Director, Fish and Wildlife Service Date



Concur: _____ August 23, 2006
Director, Fish and Wildlife Service Date

Do Not Concur: _____
Director, Fish and Wildlife Service Date

Date of annual review: November 2005

Conducted by: Boqueron, Puerto Rico Field Office